FOOD FOR THE DIABETIC

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FOOD FOR THE DIABETIC

What to eat and how to calculate it with common household measures

BY

MARY PASCOE HUDDLESON

Consulting Dietitian

With an Introduction

By

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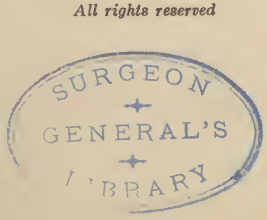
New York

THE MACMILLAN COMPANY

1923



PRINTED IN THE UNITED STATES OF AMERICA

Set up and electrotyped. Published June, 1923.

THE FERRIS PRINTING COMPANY
NEW YORK

TO

DR. MARY SWARTZ ROSE

Professor, Department of Nutrition,
Teachers' College, Columbia University,
this book is dedicated in grateful appreciation
by one of her former students.

PREFACE

The purpose of this book is to give diabetic patients, briefly and in simple language, the information of the nature of their disease from a dietetic standpoint that is necessary in order to carry out their physician's directions. This depends upon some understanding of the function of food for the normal as well as for the diabetic individual, and the elements of the dietetic treatment of diabetes.

A method is given of calculating the diet according to the patient's tolerance by means of tables in which the various carbohydrate foods, protein foods and fats are arranged in interchangeable quantities. The amounts of these units are given in grams and in ounces, and also in terms of household measurements; that is, standard half-pint measuring cup, tablespoon and teaspoon. The size of slices of bread or pieces of meat is given in inches.

Simple recipes in individual amounts are included.

INTRODUCTION

The discovery of insulin and the practical use of it in the treatment of diabetes has created a general interest. This discovery is certainly one of the great achievements in medicine of this generation. Due largely to careless newspaper reports, however, the impression is left in the minds of many that the "serum treatment" so called, is a cure. Unfortunately no cure for diabetes is known, and there are less than half a dozen cases of true diabetes recorded in medical literature which resulted in a recovery justifying the term "cure." Intelligent scientific treatment of the disease can, however, usually keep the patient in comfort, and not infrequently the progress of the disease is arrested. The use of insulin seems now to assure this even for the very severe cases which, up to a year ago, were doomed to a life of invalidism. Where insulin is used, however, as much attention has to be given to the diet as before, although the diet may be more liberal.

The cornerstone of all methods of treatment of

diabetes is diet. A diet which, in the first place, makes as little demand as possible on the disordered pancreas is essential; next, the amount of food taken must be sufficient to support the patient and to give him energy for life's various demands. These calculations are not matters of lucky guess or mere opinion. They can be estimated more accurately than the gasoline consumption of a motor car.

There was a time when the diabetic was told what he should *not* eat; he might be given a list of those foods and, while it is true that some cases of mild diabetes did very well on this plan, it is equally true that they were the lucky ones. An unbalanced diet, too rich in albumen or fat not infrequently produced harmful, sometimes fatal, results. A diet must be not only sufficient, but it must be balanced also.

For the patient who has diabetes, the best prospect of being able to live in comfort in spite of his disease lies in a clear understanding of his diet. His physician will compute for him, first, the number of calories (the total energy of food) that he requires. Depending on his age, occupation, and type, this will vary from thirty to forty calories per kilo body weight. Next, the protein ration will be estimated from the patient's weight, then the carbohydrate and fat. A definite ratio

between carbohydrate and fat must prevail, otherwise acidosis may result. Patients are usually under the impression that "meats can not produce sugar." The nutritive element in meat is protein (albumen) and 58 per cent of protein is transformed into sugar in the body.

The above facts, familiar enough to any physician conversant with diabetes, serve to show the necessity of some manual as a guide for these patients. Then, too, when the patient has learned once for all the object of his diet-formula, he will have much more freedom in the choice of foods, since he can use foods which would under different conditions be forbidden.

The methods used by Mrs. Huddleson and given in this manual are the result of a wide experience in teaching diabetics. No other system, and I have tried many, is at the same time so accurate in result and so comprehensible and practical for the patient.

NELLIS B. FOSTER, M. D.

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What to Eat and How to Calculate it with Common Household Measures

Section I

RULES TO BE OBSERVED BY THE DIABETIC PATIENT

I. *Regular visits* to a physician.

II. *Strict attention to diet,* according to the tolerance determined by the physician.

III. *Sufficient exercise,* according to the physician's directions.

IV. *Prevention of infections.* The diabetic should avoid all probable sources of infectious or contagious disease. Care should be taken to prevent cuts and abrasions, and any infection of the skin should be promptly treated by a physician.

V. *Avoidance of constipation.* The use of bran and agar biscuits, coarse vegetables, or mineral oil will usually relieve constipation in diabetic individuals. Regularity of meals and of habit is an important factor in preventing constipation.

VI. *Control of diarrhea.* If diabetes is complicated by a tendency to diarrhea, all

bran breads and mineral oil must be removed from the diet. If fruit is allowed, it should be served cooked. The coarse vegetables should be restricted as far as possible and those used should be finely chopped after cooking or served in the form of purees. Salads should not be used.

VII. *Good mental state.* Emotional disturbances should be avoided by the diabetic since they tend to aggravate his disease.

VIII. *Adequate rest.* The diabetic should have from eight to nine hours of sleep at night and short periods of rest during the day if possible.

IX. *Frequent bathing.* The body should be kept clean by frequent bathing.

X. *Sufficient clothing.* Since the diabetic must adjust himself to a lowered diet, his body heat must be conserved by sufficient clothing.

XI. *Proper care of the teeth.* Diabetes tends to develop bad teeth. Possible dental infections should be prevented by visiting a dentist for examination every six months.

XII. *Habitual regularity of meals,* hours of sleep, work and recreation should be observed.

Section II

WHAT IS DIABETES?

Diabetes is a disease characterized by an inability to utilize properly sugars and starchy foods. Instead of using these foods normally for work and heat, the body excretes them as sugar in the urine. The diabetic individual may also convert protein food, such as meats, when taken in excess, into sugar and excrete this in the same way.

With the greatly lessened ability to handle sugars and starches, there is in some cases an additional difficulty in assimilating fats, which may result in acidosis, the danger sign of impending coma.

In the treatment of diabetes the physician first places the patient on a low diet, in order to free the urine of sugar. He then determines the food tolerance, or, in other words, the number of grams of carbohydrate, protein, and fat that the patient can utilize without a recurrence of sugar or acidosis. There are various methods of determining this tolerance, but these methods are all roads leading to the same end.

In possibly no other disease is diet so vitally important as in diabetes mellitus. Again and again new procedures or drugs are introduced as cures for this disease, only to be found of little or no value in its treatment. Diet still remains the chief means of arresting the disease and restoring the patient to a condition more or less approaching the normal. It is only with intelligent co-operation and self-control on the patient's part that the physician can secure any satisfactory result.

Section III

FOOD AND ITS USE IN THE BODY

Food is that which, taken into the body, furnishes building material for the muscles, bones and fluids; furnishes energy for the performance of work and the development of body heat; and supplies regulating material for growth and the healthy maintenance of the body. Foods are divided into three principal classes, carbohydrates, protein, and fat. The carbohydrates and fats are the chief sources of energy, while the proteins supply tissue-building material for the body.

1. *Carbohydrates*—Sugar and cornstarch are practically 100 per cent, or pure, carbohydrates. Breads, cereals and cereal products are largely carbohydrate in the form of starch, with some protein and fat; they contain on the average from 12 to 75 per cent carbohydrate.

Fruits contain carbohydrates chiefly in the form of sugar. They contain very small amounts of protein and fat. Fresh fruits average from 7 to 22 per cent carbohydrate, while dried fruits average 75 per cent carbohydrate.

Fresh vegetables range from 3 to 20 per cent carbohydrate, with very small amounts of protein and fat. Dried peas and beans are about 60 per cent carbohydrate and contain about 25 per cent protein and a small amount of fat.

Vegetables and fruits which are relatively low in carbohydrate will be better tolerated by the diabetic than the more concentrated carbohydrate foods, such as breads, cereals, potatoes or bananas. Some carbohydrates are necessary to balance the fat in the diet, in order to prevent acidosis, which may result if fat is used in excess.

Table 1, page 23, gives the carbohydrate content, in grams, of vegetables, fruits, breads, and cereal products.

2. *Proteins*—Meat, fish, eggs, cheese, milk and nuts contain large amounts of protein, also fat in varying amounts. Milk, cheese, nuts, oysters, and clams contain carbohydrates in the form of sugar and starch.

The average protein requirement of the normal adult is from 50 to 75 grams per day. Protein foods must be used with caution by the diabetic, since the body can convert protein into sugar. An excess of protein foods may be as dangerous as an excess of carbohydrates.

Table 2, page 26, gives the protein content, in grams, of meat, fish, eggs, cheese, milk, and nuts.

3. *Fat*—Butter, olive oil, and other vegetable oils and rendered meat fats are practically 100 per cent fat. Meat, milk, cheese, fish, eggs, and nuts contain considerable amounts of fat. Cereals, vegetables and fruit, with but few exceptions, are low in fat.

Fats taken beyond the tolerance of the patient cause acidosis and must therefore be as carefully calculated as carbohydrates and protein.

Table 3, page 29, gives the fat content, in grams, of butter, oils and other sources of fat.

Fresh vegetables, fruits, milk, and whole cereal products furnish regulating material in the form of vitamines and mineral salts necessary for health and growth. These foods also furnish building material for the bones, tissues, and fluids of the body. Vegetables and fruits furnish bulk and acids and stimulate a healthy action of the intestines. Milk and cereal products, however, are greatly restricted in the diabetic dietary, because of their relatively high carbohydrate content. If the tolerance permits, milk, the ideal bone and tissue-building food, should always be included in the diet of the diabetic child. Some fresh and uncooked vegetables in the form of salad, or a portion of fresh fruit, should be used in the daily dict of the child or adult.

Section IV

FOOD AS A SOURCE OF ENERGY

The carbohydrates and fats are the chief sources of energy for body work and heat. Fat is a very useful food for most diabetics, since it is a very concentrated source of energy requirement. Protein is the most important body tissue-building food, and is also a source of energy.

If one knows the carbohydrate, protein, and fat content of a given quantity of food, the amount of energy or heat in this given quantity can be as accurately determined as the amount of energy or mileage obtainable from a gallon of gasoline.

The calorie* is the unit measurement of energy or heat in food. The average adult needs from 2000 to 3000 calories a day. The diabetic must learn to adjust himself to a lowered caloric intake. He must conserve his body fuel by wearing adequate clothing and having regular and ample hours of rest. The amount and kind of exercise

*A calorie is the amount of heat required to raise four pounds of water one degree Fahrenheit.

taken should be subject to his physician's discretion.

The fuel or energy value of each gram of carbohydrate, protein, or fat in food is as follows:

1 gram carbohydrate	= 4 calories
1 gram protein	= 4 calories
1 gram fat	= 9 calories

For example, if the diabetic's food prescription were "carbohydrate, 30 grams; protein, 50 grams; fat, 125 grams;" his total number of calories would be 1445.

Carbohydrate.....	30 grams × 4 =	120
Protein.....	50 grams × 4 =	200
Fat.....	125 grams × 9 =	1125
Total.....		1445 calories

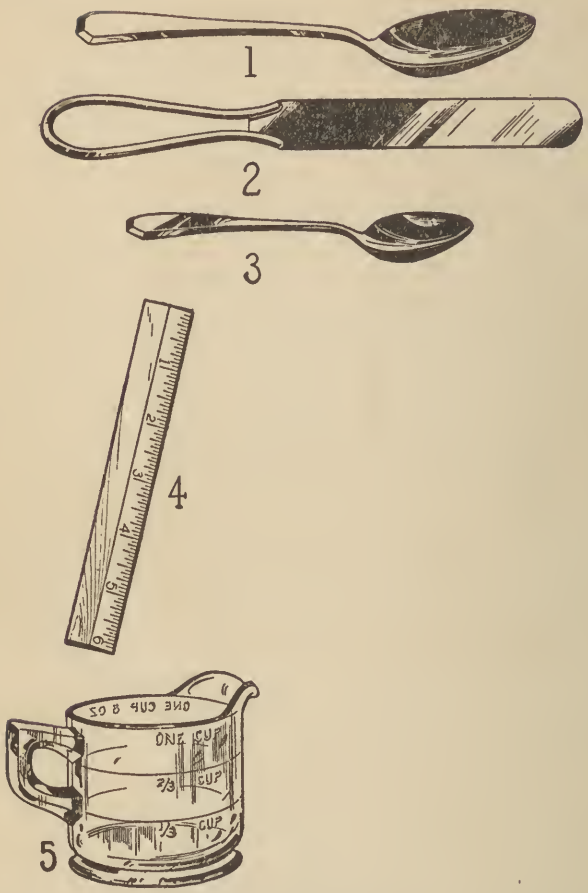

ILLUSTRATION 1.

Figure 1, Standard tablespoon; Figure 2, knife; Figure 3, Standard teaspoon; Figure 4, ruler; Figure 5, Standard half-pint glass measuring cup.

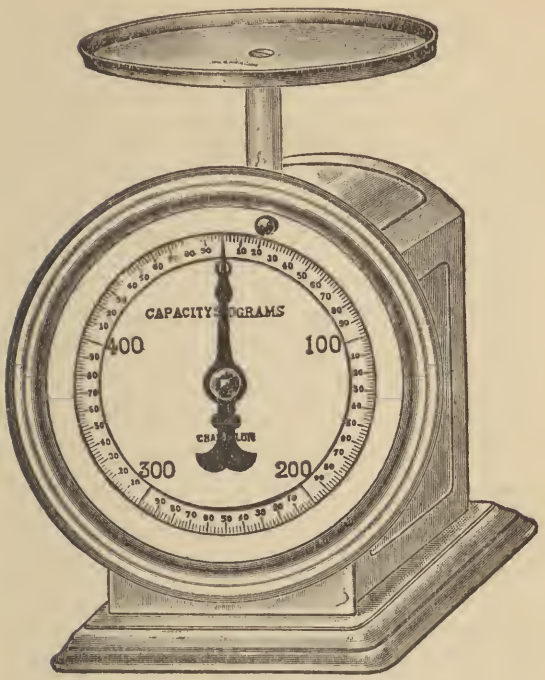

ILLUSTRATION 2.

Figure 1, Chatillon gram scale with movable disk. An empty cup or dish may be placed on platform of scale and the dial turned by means of the knob, so that the "O" point coincides with the pointer. The weight of the food placed in the empty cup or dish will be the number of grams above zero indicated by the pointer.

Section V

EQUIPMENT FOR MEASURING FOODS

Not only must the diabetic select his food with care, but he must also know the exact quantity of the various foods needed to meet his tolerance in carbohydrate, protein, and fat.

The equipment necessary consists of a good scale, weighing either in grams or in ounces; a standard half-pint measuring cup, preferably of glass, divided into quarters and thirds; and a standard tablespoon and teaspoon. A very convenient and accurate gram, or metric system, scale is manufactured by John Chatillon Sons, New York City. The dial on the scale is movable, so that the "O" point may be adjusted to meet the weight of glasses or cups in which food is placed to be weighed. The unit of weight of this scale is the gram, or approximately one-thirtieth of an ounce. In other words, thirty grams equal one ounce. Should it not be convenient to obtain the gram scale, a good grade of household scale, weighing in ounces, with a platform on which to place food, may be used.

The food tables in Section VII give the weights of food units in both grams and ounces, their quantities in terms of standard half-pint measuring cups and level tablespoons and teaspoons, and the sizes of slices of bread or meat in inches. These measurements may be used on those occasions when the patient is away from home and unable to weigh his food as he should.

Section VI

CALCULATION OF THE FOOD PRESCRIPTION

The diabetic individual must remember that a restricted and carefully calculated diet is the chief means of treating his disease. The food prescription is his food tolerance for twenty-four hours in grams of carbohydrate, protein, and fat, as determined by his physician. This food prescription should be more or less equally divided into three regular meals a day. If any food is desired between meals, it must be taken from the total allowance for the day and given at stated hours, as 10 A. M., 3 P. M., and 9 P. M.

In order to understand clearly the method of calculating the food prescription, let us take the following one as an example: carbohydrate, 30 grams; protein, 50 grams; fat, 125 grams. It is most convenient to fill the carbohydrate part of the prescription first. Section VII, page 30, gives lists of those vegetables that contain approximately 5, 10, 15 and 20 per cent carbohydrate. Page 23, Table 1, gives the amounts of each of

these classes of vegetables that will contain 5 grams of carbohydrate. For a diet containing but 30 grams of carbohydrate, it is best to use chiefly those vegetables listed in the 5 per cent group, with a small amount selected from the 10 per cent group. If a patient is allowed as much as 25 or 30 grams of carbohydrate, it is advisable to use one portion of fruit, containing 10 grams of carbohydrate and selected from the list of fruits in Table 1. Unless a patient is on an allowance of at least 40 or 50 grams of carbohydrate per day, it is best not to use cereals or any breads, with the exception of the practically carbohydrate-free, washed bran biscuits and muffins for which recipes are given.

With these points in mind, it will be seen that a prescription for 30 grams of carbohydrate can best be filled by the following:

	Carbohydrate *grams*	Protein *grams*	Fat *grams*
Any one portion of fruit taken from Table 1	10	..	..
15 oz., 450 gms., or 3 to 4½ cups 5% vegetables	15	6	..
2 oz., 60 gms., or ½ cup 10% vegetables	4	1	..
Total	29	7	..

It is safest to keep the total carbohydrate allow-

ance a little under rather than over the prescribed amount.

We will next fill the protein part of the prescription, keeping in mind that the small amount of protein in the vegetables selected has already used up 7 grams of the protein allowance, leaving a remainder of 43 grams. The Table of Protein Equivalents, page 26, gives the amount of cooked and uncooked meats, fish, cheese, eggs, milk, or nuts that will contain 6 grams of protein. It will be seen that in this table only oysters, clams, milk, and some nuts contain an appreciable amount of carbohydrate. If any of these foods are used, it means a reduction of the vegetables allowed on which the patient depends for the satisfying bulk in his diet.

The remaining protein, that is, 43 grams, may be supplied as follows:

	Carbohydrate *grams*	Protein *grams*	Fat *grams*
2 eggs	..	12	12
1 oz., 30 gms., or 2 tablespoons cream cheese	..	6	8
4 oz., or 120 gms. lean meat, weighed raw			
or			
3 oz., or 90 gms. cooked lean meat			
or			

4 oz., or 120 gms. lean boiled ham			
or			
4⅔ oz., or 140 gms. fish, weighed raw			
or			
4 oz., or 120 gms. cooked fish.	..	24	12
Total	..	42	32

In place of cheese, an extra egg or bacon may be used in the above calculation.

The carbohydrate and protein needs have now been met. The balance of fat still to be provided is 125 minus 32, or 93 grams, and may be supplied from the Table of Fat Equivalents, on page 29, as follows:

	Carbohydrate *grams*	Protein *grams*	Fat *grams*
5 tablespoons butter	..	..	60
3 tablespoons heavy cream (40%)	1	1	18
1 tablespoon mayonnaise	..	..	15
Total	1	1	93

Adding up the three totals, we have:

	Carbohydrate *grams*	Protein *grams*	Fat *grams*
Vegetables and fruits	29	7	..
Eggs, cheese and meat	..	42	32
Fats	1	1	93
Final total	30	50	125

Or let us take a food prescription such as this: carbohydrate, 70; protein, 50; and fat, 170. How may this rather liberal food allowance be calculated?

	Carbohydrate *grams*	Protein *grams*	Fat *grams*
1 portion fruit	10	..	..
1 portion cereal from Table 1.	10	2	..
1 oz., 30 gms., or 1½ slices bread	15	2	..
10 oz., or 300 gms. 5% vegetables	10	6	..
5 oz., or 150 gms. 10% vegetables	10	2	..
6⅔ oz., 200 gms., or 1 glass milk	10	6	8
1⅙ oz., 35 gms. bacon, cooked	..	6	18
1 egg	..	6	6
3 oz., or 90 gms. lean meat uncooked			
or			
2¼ oz., or 67 gms. meat cooked	..	18	9
1⅓ tablespoons mayonnaise.	..	..	20
10 tablespoons 40% cream	4	4	60
3¾ tablespoons butter	..	..	45
⅚ oz., 25 gms., or 5 ripe olives	1		5
Total	70	51	171

Again we may take for illustration a food prescription such as this: carbohydrate, 15; protein, 25; fat, 40. How may this very low allowance be filled? The following is suggested:

	Carbohydrate *grams*	Protein *grams*	Fat *grams*
½ of any portion of fruit in Table 1	5	..	..
10 oz., or 300 gms. 5% vegetables	10	4	..
1 egg	..	6	6
2½ oz., or 75 gms. lean meat, uncooked			
or			
2 oz., or 60 gms. lean meat, cooked			
or			
2½ oz., or 75 gms. boiled ham			
or			
3 oz., or 90 gms. fish uncooked			
or			
2½ oz., or 75 gms. fish cooked	..	15	8
1¼ tablespoons butter	..	..	15
2 tablespoons 40% cream	..	..	12
Total	15	25	41

In a low diet such as the above, thrice-boiled 5 per cent vegetables are particularly useful as "fillers," since they are practically starch-free and may be safely used to meet the patient's need of satisfying bulk. Gelatine or agar desserts made with non-carbohydrate fruit flavors may be given also, and do not need to be reckoned as having food value.

In filling a food prescription, it is neither practical nor necessary that the carbohydrate, protein,

or fat amounts should reach the exact number of grams called for; it is necessary that they should not too greatly *exceed* this exact number. One or two grams over or under are permissible. Calculations involving detailed fractions are impractical for everyday use.

Suggestions as to the arrangement of the above three food prescriptions are given in Section VIII.

Section VII

FOOD TABLES*

I. Table of Carbohydrate Equivalents

VEGETABLES

Any one of the following amounts contains approximately 5 grams of carobhydrate. The amount of fat in most vegetables is negligible and does not need to be considered in calculating the diet. See page 30 for lists of 5, 10, 15, and 20 per cent carbohydrate vegetables. The weights given are of the edible portion of either canned or fresh vegetables.

	Carbohydrate *grams*	Protein *grams*
5% vegetables, 5 oz., 150 gms., or 1 to 1½ cups	5	2
10% vegetables, 2½ oz., 75 gms., or ½ cup	5	1
15% vegetables, 1⅙ oz., 35 gms., or ¼ to ⅓ cup	5	1
20% vegetables, ⅚ oz., or 25 gms	5	1

*All measurements given are for *level* tablespoon, teaspoon and standard one-half pint measuring cup.

FRUITS

Any one of the following portions contains approximately 10 grams of carbohydrate. Weights given are of fresh fruits as purchased, unless otherwise specified. Canned fruits, when canned without sugar, may be used in place of fresh. The amount of protein and fat in most fruits is negligible, and does not need to be considered in calculating the diet.

	Weight of portion
Grapefruit, ½ small, diameter 4 inches	5 oz. or 150 gms.
Grapefruit, edible portion	4 oz. or 120 gms.
Grapefruit juice, 7 tablespoons	3⅔ oz. or 110 gms.
Watermelon, edible portion	5 oz. or 150 gms.
Strawberries, edible portion, ⅔ cup	4½ oz. or 135 gms.
Peaches, 1 medium	4⅓ oz. or 130 gms.
Orange, 1 small, 2½ inches in diameter	4 oz. or 120 gms.
Orange, edible portion	3 oz. or 90 gms.
Orange juice, 5 tablespoons	2⅔ oz. or 80 gms.
Lemon juice, 6 tablespoons	3⅓ oz. or 100 gms.
Cranberries, ¾ cup, or pineapple, fresh, edible portion	3⅓ oz. or 100 gms.
Muskmelon, ½ small	7 oz. or 210 gms.
Muskmelon, edible portion	3⅓ oz. or 100 gms.
Apple, 1 small, 2¾ inches in diameter	3 oz. or 90 gms.
Blackberries, ¼ cup, 25 berries	3 oz. or 90 gms.
Currants, ⅔ cup, or raspberries ½ cup	2⅔ oz. or 80 gms.
Apricots, 1 small, or pear, 1 small	2⅔ oz. or 80 gms.
Grapes, 14 Malaga	2⅓ oz. or 70 gms.
Blueberries, ⅓ cup, cherries or huckleberries, ½ cup scant	2 oz. or 60 gms.
Banana, edible portion, ⅓ average, or plum, 1 large	1½ oz. or 45 gms.

BREADS

Any one of the following portions contains approximately 10 grams of carbohydrate. The amount of fat in breads is negligible, and does not need to be considered in calculating the diet.

	Carbohydrate *grams*	Protein *grams*
White, ⅔ oz., 20 gms., or 2 small slices (3½ × 2½ × ¼ inch)	10	2
Whole wheat, ⅔ oz., 20 gms., or 1 slice (2½ × 2¾ × ¼ inch)	10	2
Rye, ⅔ oz., 20 gms., or 1 slice (4 × 3 × ½ inch)	10	3
Gluten, 1⅙ oz., 35 gms., or 2 slices (3½ × 3 × ⅓ inch)	10	10

(The above is an average sample of gluten bread containing 30 per cent carbohydrate. Very few gluten breads are starch-free.)

CEREALS

Any one of the following portions contains approximately 10 grams of carbohydrate. The fat content of cereals is negligible, and does not need to be considered in calculating the diet.

	Carbohydrate *grams*	Protein *grams*
Corn flakes, ½ oz., 15 gms., or ⅝ cup	10	1
Farina, uncooked, ½ oz., 15 gms., or 1½ tablespoons	10	2
Macaroni, uncooked, ½ oz., or 15 gms.	10	2

Macaroni, cooked, 2⅓ oz., 70 gms., or ½ cup (scant)	10	2
Oatmeal, rolled, uncooked, ½ oz., 15 gms., or ¼ cup	10	2
Oatmeal, rolled, cooked, 3 oz., 90 gms., or ½ cup (scant)	10	2
Rice, boiled, 1⅓ oz., 40 gms., or ¼ cup	10	1
Rice, puffed, ½ oz., 15 gms., or ⅔ cup (scant)	10	2
Wheat, puffed, ½ oz., 15 gms., or ¾ cup.	10	2
Wheat, shredded, ½ oz., 15 gms., or ½ biscuit	10	2

II. Table of Protein Equivalents

Any one of the following portions contains approximately 6 grams of protein:

MEATS

	Protein *grams*	Fat *grams*	Carbohydrate *grams*
Meat (lean, without bones), beef, chicken, lamb, mutton, pork, turkey or veal. Uncooked, 1 oz. or 30 gms.	6	3	..
Meat, as above. Cooked, ¾ oz., 22 gms., or slice (2½ × 3 × ¼ inch)	6	4	..
Bacon, cooked, 1⅛ oz., 35 gms., or 4 to 6 slices (4½ × 2 × ⅛ inch)	6	18	..
Chicken, broiler (with bones), Uncooked, 1⅔ oz. or 50 gms.	6	1	..
Ham, lean, boiled, 1 oz., 30 gms., or slice (4 × 4 × ⅛ inch)	6	5	..

FISH

Fish (non-fatty, edible portion), such as bluefish, cod, flounder, haddock, or tunny.			
Uncooked, 1⅙ oz., or 35 gms.	6	1	..
Cooked, 1 oz., 30 gms., ¼ cup, or slice (1 × 2¼ × 1 inch)	6	1	..
Fish (fatty, edible portion), such as butter-fish, halibut, mackerel, salmon, or sardines.			
Uncooked, 1⅙ oz., or 35 gms.	6	3	..
Cooked, 1 oz., 30 gms., or ¼ cup	6	3	..
Clams, 2⅓ oz., 70 gms., or 6 average	6	..	3
Lobster, or crab-meat, 1⅙ oz., 35 gms., or ¼ cup	6	1	..
Oysters, 3⅓ oz., 100 gms., or 6 large	6	1	4
Shrimp, ¾ oz., 22 gms., or 4 to 5 average	6	..	..

CHEESE

American, ¾ oz., 22 gms., or piece (1 × 1 × 1¾ inch)	6	8	..
Cottage, 1 oz., 30 gms., or 2 level tablespoons	6	..	1
Cream, 1 oz., 30 gms., 2 level tablespoons, or ⅛ package.	6	8	..
Neufchatel, or Roquefort, 1 oz., 30 gms., or 2 level tablespoons	6	8	..
Swiss, ¾ oz., 22 gms., or slice (4½ × 3½ × ⅛ inch)	6	8	..

EGGS			
1 egg	6	6	..
1 egg yolk	3	6	..
1 egg white	3	..	..
MILK			
Whole milk, 6⅔ oz., 200 gms., 1 medium glass, or ¾ measuring cup	6	8	10
NUTS*			
Almonds, 1 oz., 30 gms., or 30 average nuts	6	16	5
Brazil nuts, 1⅙ oz., 35 gms., or 4 to 5 nuts	6	23	3
Butternuts, ⅔ oz., 20 gms., or 6 to 7 nuts	6	12	1
Filberts, or hickory nuts, 1⅓ oz., 40 gms., or 40 nuts	6	27	5
Pecans, 2 oz., 60 gms., or 50 nuts	6	42	9
Walnuts, English, 1⅙ oz., 35 gms., or 7 to 8 nuts	6	22	6

*Weights of nuts given are of the edible portion.

III. Table of Fat Equivalents

Any one of the following portions contains approximately 15 grams fat.

	Protein *grams*	Fat *grams*	Carbohydrate *grams*
Alligator pear (as purchased) 4 oz., or 115 gms.	2	15	5
Bacon, cooked, 1 oz., 30 gms., or 3 to 5 small slices	5	15	..
Butter, ⅜ oz., 17 gms., 1¼ level tablespoons, or 1 square ⅝ inch thick	..	15	..
Cream (20%) 2½ oz., 75 grms., or 5 tablespoons	2	15	3
Cream (40%) 1⅛ oz. 40 gms., or 2½ tablespoons	1	15	1
Fat of bacon, chicken, or meat; olive oil, oleomargarine, or mayonnaise, ½ oz., 15 gms., or 1 level tablespoon	..	15	..
Olives, ripe, 2½ oz., 75 gms., or 10 to 15 olives	1	15	3
Olives, green, 2½ oz., 75 gms., or 10 to 15 olives	..	15	6
Peanut butter, 1 oz., 30 gms., or 2 tablespoons	9	15	5

Note:—The top 4 oz., or ½ cup of bottled milk is 20% cream.

Vegetables Grouped According to Their Carbohydrate Content

5% Vegetables

Asparagus, beet greens, Brussels sprouts, cabbage, celery, cauliflower, chard, cucumber, egg plant, endive, green pepper, kale, kohl-rabi, leeks, let-

tuce, parsley, radishes, rhubarb, sauerkraut, sea kale, sorrel, spinach, string beans, tomatoes, and water cress.

10% Vegetables

Beets, carrots, okra, mushrooms, onions, pumpkin, squash, and turnips.

15% Vegetables

Artichokes, canned or cooked green lima beans, parsnips, and canned or cooked green peas.

20% Vegetables

Baked beans, canned or fresh green corn, canned red kidney beans, white potatoes, and canned succotash.

Note:—Bulletin No. 28 of the U. S. Department of Agriculture, Rose's "Laboratory Handbook for Dietetics" and "Feeding the Family," are the authorities for the above food values. The bulletin may be obtained by sending ten cents in stamps to the Superintendent of Documents, Government Printing Office, Washington, D. C.

Section VIII

MENU PLANNING

After the patient's total daily food requirement has been calculated, according to the method outlined in Section VI, it is usually most convenient to weigh or measure this total amount in the morning and keep it separate from the rest of the family food. This method calls for only one weighing operation a day. The total amount measured out should then be divided into three parts, a part for each of the next three meals—dinner, supper, and breakfast of the following morning.

The food prescription: carbohydrate, 30; protein, 50; fat, 125; which has been calculated in Section VI, may be arranged as follows:

Breakfast

1 portion fruit from Table 1
1 egg
3-1/3 oz., or 100 gms. 5% vegetables
Bran biscuits
1 tablespoon butter
Coffee with 1 tablespoon cream, and saccharine if desired

Dinner

Clear broth, or vegetable soup, made with a small portion of the day's allowance of 5% vegetable
Day's allowance of meat, fish or poultry, which may be weighed before or after cooking
2½ oz., or 75 gms. 10% vegetables
3-1/3 oz., or 100 gms. 5% vegetables
2 tablespoons butter
1 tablespoon cream
Bran biscuits
Coffee or tea, with saccharine

Supper

1 egg omelette
3-1/3 oz., or 100 gms. 5% vegetables, cooked
5 oz., or 150 gms. 5% vegetables, uncooked, and in the form of a salad such as tomato and lettuce salad
1 tablespoon mayonnaise
2 tablespoons butter
1 tablespoon cream
Bran biscuits
Cocoa made from cocoa shells and sweetened with saccharine

The second prescription calculated in Section V: carbohydrate, 70; protein, 50; and fat, 170; can be divided, for example, into the following menus:

Breakfast

1 portion fruit from Table 1
1 portion cereal from Table 1

4 tablespoons cream for cereal and coffee
Bran biscuits with 1 tablespoon butter
Coffee

Dinner

Day's allowance of meat
5 oz., or 150 gms. 10% vegetables, cooked
3 oz., or 90 gms. 5% vegetables, as salad
1-1/3 tablespoons mayonnaise
1 slice bread
5 ripe olives
1¾ tablespoons butter
3 tablespoons cream
Coffee or tea with part of the cream, the remainder may be used on vegetables

Supper

Broth, or soup, with 2 oz., or 60 gms. 5% vegetables
1-1/6 oz., or 35 gms. bacon, cooked
5 oz., or 150 gms. 5% vegetables, cooked
½ slice bread
3 tablespoons cream, to be used on vegetable or in soup
1 tablespoon butter
Custard made of 1 egg and cup of milk; or egg may be served with bacon, and milk used as beverage.

The third prescription calculated in Section VI: carbohydrate, 15; protein, 25; fat, 40; may be arranged in the following menus:

Breakfast

½ portion of any fruit in Table 1
1 egg
Bran biscuits
1 tablespoon butter
Coffee with ½ tablespoon cream

Dinner

Broth
Day's allowance of meat
3-1/3 oz., or 100 gms. 5% vegetables
"Fillers" of thrice-cooked vegetables, prepared according to directions on page 54.
2 teaspoons butter
½ tablespoon cream
Bran biscuits

Supper

Soup made of meat stock or broth and 1 oz., or 30 gms. of any 5% vegetable
2½ oz., or 75 gms. 5% vegetables, cooked
3-1/3 oz., or 100 gms. 5% vegetables as salad to be served with vinegar, salt and pepper
Bran biscuits
1 teaspoon butter
Jelly dessert made with sugar-free fruit extract and served with remainder of cream

In dividing the total amount of food one may suit the patient's taste to some extent, keeping in mind, however, that it is safest to divide it in such a manner that no one meal contains a preponderance of the day's allowance of carbohydrate. The

fat that has been estimated is the only fat that can be used for dressing vegetables or in the making of an omelette. On the days when white-fleshed (non-fatty) fish is used, add one extra teaspoon of fat for each two ounces of fish allowed. The portion of fruit may be divided into two portions by taking one-half of a small orange, for example, for breakfast, while the remaining half can be made into a jelly sweetened with saccharine and served as a dessert for dinner or supper, with part of the day's allowance of cream, whipped. Instead of cream cheese being used with a salad, the same proportion of American cheese may be used, grated over one of the servings of 5 per cent vegetable, as in cabbage au gratin, or in a cheese omelette.

Coffee, tea, cocoa made from cocoa shells, washed bran and agar biscuits, and mineral oils need not be considered in the calculation of the diet, as they have no food value. Meat broth and thrice-cooked vegetables prepared according to directions given in Section VIII are classed as "fillers," as they have very little food value, and do not need to be weighed. Broths should not be too highly salted, because too much salt may result in a retention of water in the body, causing a temporary swelling of the face and extremities. The bran and agar biscuits, for which a recipe is

given, make a very useful bread substitute, especially since they are valuable in relieving constipation, a condition quite prevalent among diabetics. If gluten breads are used, then less meat can be given, gluten flour being high in protein. Most gluten breads contain considerable starch as well. For those who are on a very restricted fat allowance, mineral oil is useful in the preparation of salad dressings, since this oil is not digested by the body and cannot give rise to acidosis. Gelatine desserts using sugar-free fruit flavors also come under the classification of extras or "fillers."

Seasonings, such as salt, pepper, paprika, onion and celery salt, bay-leaf, parsley, and vinegar, may be used in moderation, and are not considered as having food value. Spices, such as cinnamon and nutmeg, and flavoring essences, such as vanilla, lemon, or orange, may be used in the preparation of diabetic custards and other desserts.

Section IX

DIABETIC RECEIPES*

BROTHS and SOUPS

BEEF, MUTTON, CHICKEN OR VEAL BROTH

1 lb. meat (beef, mutton, veal or chicken)
1 qt. cold water
1 teaspoon salt

Cut meat into small pieces, cover with water, add salt, let stand one-half hour, then heat gradually to the boiling point. Simmer gently 2 or 3 hours. Allow to cool, over night if possible, then skim off all fat. Strain through a coarse sieve. A cup of broth (one serving) may be heated when required and one-half teaspoon of chopped parsley, onion or green pepper added as seasoning. A little onion or celery salt, paprika or a bay leaf may also be used as seasoning. Prepared bouillon cubes may be used in moderation, and are considered as having practically no food value. Broths should not be too highly salted, as an excess of salt may result in retention of water in

*All measurements given are for *level* tablespoon, teaspoon and standard one-half pint measuring cup.

the body, thus causing a temporary swelling of the lower extremities and of the face. Broths, unless very concentrated, are considered as having no food value.

CLAM BROTH

3 clams
1 cup water Salt and pepper to taste

Scrub clams, place in water and heat until shells open; then take from water, and remove clams from shells. Chop clams into small pieces and return to water. Cook 15 minutes. Season, strain and serve. One or two tablespoons of cream may be added if allowed in diet.

VEGETABLE SOUP

2 cups clear meat broth
5% vegetables (50 gms., 1-2/3 oz., or approximately ½ cup)
10% vegetables (10 gms., 1/3 oz., or approximately 1 level tablespoon)
Salt and pepper to taste

Instead of using plain broth, part of the day's allowance of vegetables may be prepared and added to broth and cooked until tender. The total amount of 5 per cent vegetables used may be a combination of tomato, cabbage and celery. Either carrots or onions may be used to make up the 10 grams of 10 per cent vegetables.

CREAM OF VEGETABLE SOUP

1 cup puree and juice of any 5% vegetable
1 cup broth, meat stock, or water
Salt and pepper to taste
1 egg yolk

Any 5 per cent vegetable, cooked or canned, such as tomatoes, asparagus, spinach, celery, or cauliflower, may be rubbed through a sieve, then added to broth or water and brought to boiling point. Season with salt and pepper to taste. Just before serving, beat egg yolk slightly, add to it, slowly, a little of the hot mixture, stirring all the while, then stir mixture into the soup. Do not allow to boil after adding egg yolk. A teaspoon of finely chopped parsley, onion or celery salt may be added for flavor. Two tablespoons of cream (if allowed in diet) may be added to soup just before serving.

In making cream of asparagus soup, the tender tips should be reserved and added to soup when serving.

JELLIED CHICKEN BROTH

Prepare chicken broth according to directions given under broths. Soak 1 teaspoon of gelatine in 2 tablespoons of cold water five minutes, then add one-half cup of boiling-hot chicken broth seasoned to taste with salt and celery salt. Set

aside in a cool place until firm. Other broths, such as clam and beef, may be prepared in the same way.

MUSHROOM SOUP

4 mushrooms
2 teaspoons butter
1 cup chicken stock
1 egg yolk
1 tablespoon heavy cream
Salt, pepper, and onion salt

Clean mushrooms, chop and cook slowly in butter five minutes, add stock and simmer ten minutes. Rub through sieve, reheat and add egg yolk slightly beaten, cream and seasonings to taste.

ONION SOUP

Follow directions and amounts used in above recipe for Mushroom Soup, substituting 1 small onion, chopped, for mushrooms and let simmer in stock 20 minutes, or until tender. Omit onion salt in seasoning.

FISH

BAKED FISH

Place a halibut steak or any fish suitable for baking in a small baking pan or casserole, brush over with 1 teaspoon of the day's allowance of butter, melted. Season with salt and pepper. Bake in

a moderate oven for about 20 minutes. One slice of bacon raw, weighing ½ oz., or 15 gms., may be placed over fish instead of butter. Garnish with parsley and serve plain or with any of the fish sauces, for which recipes are given.

BROILED FISH

Place fish in a lightly greased double-wire broiler, season with salt and pepper, brush with 1 teaspoon of melted butter, turn often while broiling. The time of cooking will vary with the size or thickness of fish. Fish is done when the flesh separates easily from the bone.

BOILED FISH

Place fish in steamer or in a wire basket placed over boiling water, cover and cook 15 to 20 minutes until done. Baked, broiled or boiled fish may be served with any of the following sauces:

MEAT and FISH SAUCES

CUCUMBER SAUCE

Pare one-half fresh cucumber, grate or put through food chopper. Season with salt, pepper, and vinegar. A small piece of red pepper, finely chopped, may be added.

TOMATO SAUCE

To one cup of cooked and strained tomato juice and pulp, add one-half teaspoon of chopped onion and a small piece of Irish moss. Cook gently 10 to 15 minutes, strain, season, and serve.

HOLLANDAISE SAUCE

2 tablespoons butter
½ tablespoon vinegar
1 egg yolk
3 tablespoons water
Salt and pepper

Put butter, vinegar and water in small saucepan, place over hot water. When hot, add a small amount of the hot mixture to the egg yolk, mix well. Then add slowly to mixture in saucepan, stirring continually. Season and serve while hot.

HORSERADISH SAUCE

Two teaspoons of grated horseradish (food value approximately 1 gram of carbohydrate) may be added to one-half the recipe for Hollandaise Sauce, and served with fish.

SAUCE TARTARE

To one tablespoon of mayonnaise, add one-half teaspoon of finely chopped green or red pepper,

chopped sour cucumber pickle (made without sugar), and chopped chives.

SPANISH SAUCE

½ tablespoon butter
½ green pepper
½ small onion
1 small tomato
1 tablespoon chopped celery
Salt and pepper

Melt butter, add green pepper, onion, and celery, finely chopped. Let brown slowly ten minutes, then add tomato, peeled and cut into small pieces. Cook ten minutes, season and serve. This sauce may be served with plain or puffy omelette.

PARSLEY BUTTER

1 tablespoon butter
1 teaspoon chopped parsley
1 teaspoon lemon juice (½ gram carbohydrate)
Salt and pepper

Cream butter, add lemon juice, salt, pepper, and chopped parsley. Serve with steak or fish.

MINT SAUCE

2 tablespoons mint leaves
¼ cup vinegar
¼ grain saccharine

Add vinegar to finely chopped mint leaves. Let stand 30 minutes in warm place to infuse. Add saccharine.

MEAT

PAN-BROILED BEEF CAKES

Put a piece of the upper part of round steak through the food chopper, shape into small cakes. Put 1 teaspoon of fat in a small frying pan. When very hot, put in cakes, sear on both sides and cook five to ten minutes. Season with salt, pepper, and onion salt, if desired, and serve.

BROILED BACON

Place bacon on wire rack over baking pan. Cook in a moderately hot oven until crisp.

BEEF STEW

Cut lean beef or lamb into uniform pieces. Put 1 teaspoon of fat in frying pan. When very hot, add meat and sear or brown thoroughly. Then add hot water to cover. Simmer gently for one hour, then add part of the day's allowance of 5 and 10 per cent vegetables, cut in small pieces, as follows: 1 oz., or 30 gms. of celery; 2 oz., or 60 gms. of tomato, and 2½ oz., or 75 gms. of carrots, turnips and onion. Cook until vegetables are tender, season and serve.

BOILED DINNER

2 oz., or 60 gms. corned beef
3 oz., or 90 gms. cabbage
3 oz., or 90 gms. 10% vegetables

Simmer meat in three cups of boiling water until tender. Remove meat. Skim off fat from water, and add vegetables. Cook until tender. Reheat meat and serve. Equal parts of carrots, beets, and turnips may be used for the 10 per cent vegetables.

ROASTS OR CHOPS

In serving roast meat, or poultry, or broiled chops, weigh solid meat without bone or fat, after cooking. Meat drippings or fat may be used if measured and accounted for in calculating the day's allowance of fat.

EGGS

BUTTERED EGG

Put one teaspoon melted butter in small casserole or baking dish. Break egg into cup and slip into the baking dish. Sprinkle with salt and a little pepper and bake in oven until white is firm.

BAKED EGG IN TOMATO

Cut a splice from the stem end of a tomato, scoop out pulp. Break egg and slip into the hollowed tomato. Season and bake until egg is firm.

PLAIN OMELET

1 egg
1 tablespoon cream
1 teaspoon butter
Salt and pepper

Beat egg slightly, add cream and seasonings. Put butter in small omelet pan; when hot, turn in egg mixture and prick and lift with fork while cooking. Fold, turn out on hot plate, and serve.

PUFFY OMELET

1 egg
1 tablespoon boiling water
1 teaspoon butter
Salt and pepper

Separate yolk from white. Beat white until stiff and yolk until thick and lemon colored. Add boiling water and seasonings to egg yolk, fold in stiffly beaten white, turn into hot buttered pan, brown two to three minutes over fire, then place pan in moderate oven for one or two minutes. Fold half over and serve immediately. A little grated American cheese, chopped ham, or parsley may be added to mixture before turning into omelet pan.

CHEESE RECIPES

CELERY AND CHEESE SALAD

Select small stalks of celery having deep grooves, wash, dry and cut into two-inch pieces. Fill stalks with cream, cottage or Neufchatel cheese, seasoned with salt and paprika. Serve on lettuce with French dressing.

TOMATO AND CHEESE SALAD

Peel one medium sized tomato, cut into quarters and arrange on bed of lettuce with one ounce of cream or cottage cheese shaped in small balls. Serve with French or mayonnaise dressing.

GREEN PEPPER AND CHEESE SALAD

Wash, cut into halves crosswise, and remove seeds from green pepper. Fill halves with mashed and seasoned cream or cottage cheese. Cut filled pepper halves into thin slices and arrange on bed of lettuce. Serve with French or mayonnaise dressing.

CHEESE RAREBIT

2 oz. mild American cheese
½ egg
1 teaspoon butter
2 tablespoons cream
⅛ teaspoon mustard
Salt, paprika

Melt butter in sauce pan, add cheese finely chopped, and seasonings. Stir continually. As cheese begins to melt, add cream slowly, and last of all add one-half of a slightly beaten egg.

CAULIFLOWER WITH CHEESE

Separate boiled cauliflower into pieces and arrange in small baking dish. Season with salt and pepper, add two tablespoons of cream and sprinkle with one ounce or less of grated American cheese. Place in moderate oven until brown. Cooked cabbage may be used in place of cauliflower.

DIABETIC BREADS

BRAN CAKES (NO FOOD VALUE)

3 cups bran
1-½ tablespoons India gum
1 tablespoon mineral oil
½ teaspoon salt
½ teaspoon cinnamon
Saccharine
Water to mix

Place bran in cheese-cloth bag and wash under running water until water runs clear and bran is free of starch. Wring dry and place in bowl. Add salt, cinnamon, India gum, mineral oil, and saccharine if desired. Add just enough water to make a stiff paste, and mix and knead thoroughly. Turn mixture into a baking pan greased with mineral oil, spread out one-quarter inch thick,

cut into squares, and bake in a moderate oven until crisp.

BRAN AND AGAR BISCUITS (NO FOOD VALUE)

3 cups bran
2 tablespoons agar
1 cup water
½ teaspoon salt
¼ teaspoon cinnamon

Wash bran according to directions given in above recipe. Drain bran and spread in a pan to dry. Place in bowl, add salt, and cinnamon if desired. Add agar to water and boil slowly five minutes, then stir into mixture in bowl to make a stiff paste. Turn out on board, spread out to one-quarter inch in thickness and cut into small squares. Allow to dry over night, then bake in a moderate oven until crisp.

BRAN AND CELLU-FLOUR BREAD (NO FOOD VALUE)

1 cup bran
2/3 cup cellu-flour
3 teaspoons baking powder
1-¼ tablespoons India gum
4 tablespoons mineral oil
½ teaspoon salt
Water to mix

Prepare bran according to directions given under Bran Cakes, place in bowl and add cellu-flour, baking powder, India gum, and salt. Mix thoroughly, then add mineral oil and sufficient water to make a stiff dough. Mold into small cakes one

inch thick. Place in pan greased with mineral oil and bake in slow oven one and one-half hours.

BRAN AND CELLU-FLOUR CAKES (NO FOOD VALUE)

Prepare mixture as for Bran and Cellu-flour Bread, using one-third instead of two-thirds cup cellu-flour. Spread out to one-fourth inch thickness in a greased baking pan. Cut into squares and bake until crisp in a moderate oven. These cakes may be sweetened with saccharine and flavored with cinnamon or vanilla if desired.

BRAN MUFFINS

(Food value: prot. 6 gms., carbo. 0 gms., fat 6 gms.)

1 cup bran	1 tablespoon mineral oil
¼ teaspoon salt	¼ grain saccharine
1 teaspoon baking powder	1 egg

Wash bran according to directions given under Bran Cakes. Place washed bran, salt, baking powder, mineral oil, and saccharine, if desired, in bowl. Mix well, then add well beaten egg yolk, and, lastly, cut and fold in stiffly beaten egg white. Divide mixture equally into six muffin rings which have been greased with mineral oil. Bake in moderate oven fifteen minutes. Each muffin will have a food value of protein, 1 gm., and fat, 1 gm.

Note. Bran used in above recipes may be dried

thoroughly after washing and then ground finely in a grist mill. Bran prepared in this way will make a finer biscuit though not so satisfactory for use when diabetes is associated with constipation.

SALADS

TOMATO AND CELERY SALAD

Peel tomato and remove seeds and pulp; fill hollow with chopped celery mixed with mayonnaise. Serve on bed of lettuce.

CABBAGE SALAD

Select a firm green cabbage. Cut into quarters, core and slice very thinly. Mix with boiled or mayonnaise dressing. One teaspoon of finely chopped onion or green pepper may be added.

TOMATO JELLY SALAD

1 cup tomatoes
½ teaspoon chopped onion
¼ teaspoon salt
Paprika
1 sprig of parsley
2 teaspoons gelatine
2 tablespoons cold water

Add onion, parsley and seasonings to tomato, simmer fifteen minutes, strain, and add while hot to gelatine which has been soaked in the cold water. Pour into two small cups, chill, and serve

on lettuce leaves with mayonnaise dressing. A small amount of cucumber cut into cubes, cold cooked string beans, or celery cut into small pieces may be added to mixture when poured into molds.

ASPARAGUS SALAD

Cut a ring one-third inch wide from a red or green pepper. Put four or five canned asparagus stalks through ring, arrange on lettuce leaves, and serve with mayonnaise dressing.

SPINACH SALAD

Arrange cold, cooked and chopped spinach in a mound on a bed of lettuce. Serve with French dressing and garnish with hard-boiled egg cut into quarters lengthwise.

JELLIED VEGETABLE SALAD

2 teaspoons gelatine
3 tablespoons vinegar
¼ grain saccharine
⅛ teaspoon salt
Paprika to taste
⅞ cup boiling water

Soak gelatine in vinegar five minutes, add saccharine, salt, paprika, and boiling water. Cool, and as mixture begins to thicken add chopped cabbage, celery, green pepper, cucumber or other desired vegetable. Turn into mold and chill. Serve on lettuce with mayonnaise dressing.

FISH SALAD

Canned tunny fish, salmon, or crab meat may be combined with chopped celery and moistened with mayonnaise or boiled dressing and served on lettuce.

SALAD DRESSINGS

FRENCH DRESSING

1 tablespoon olive oil
½ tablespoon vinegar
⅛ teaspoon salt
Pepper and paprika

Mix ingredients and beat with fork until creamy.

BOILED DRESSING

½ teaspoon salt
½ teaspoon dry mustard
Paprika
1 egg yolk
1 tablespoon melted butter
¼ cup (4 tablespoons) cream
1 tablespoon vinegar

Mix dry ingredients, add egg yolk, melted butter and cream. Heat over hot water, adding the vinegar gradually. Stir constantly, until mixture thickens.

MAYONNAISE DRESSING

½ teaspoon salt
½ teaspoon dry mustard
Paprika
1 egg yolk
1 tablespoon vinegar
1 cup olive, salad or mineral oil

Mix dry ingredients, add egg yolk and vinegar, then add the oil gradually, beating constantly with Dover egg beater. Mineral oil may be used in place of olive, or salad oil, when patient is on a very low allowance of fat. Have ingredients cold before mixing in order to insure best results.

VEGETABLES

THRICE-BOILED VEGETABLES

The 5 and 10 per cent groups of vegetables are made practically carbohydrate-free by the following method. Prepare vegetables and cut into small pieces, tie up loosely in a square of cheesecloth and let stand in cold water thirty minutes. Drain and put in kettle of cold water. Bring to boiling point, and boil five minutes. Drain, put on again in cold water and bring again to boiling point, boil five minutes. Three periods of boiling are sufficient to make the vegetables practically free of starch, and they are then classed as "fillers" or "extras" and are neither weighed nor considered in filling the food prescription.

PREPARATION OF VEGETABLES

All vegetables used, other than those thrice-boiled, must be weighed and considered in cal-

culating the food allowance for the day. The weights should be taken of the *edible portion* only, after peeling or other waste is removed. Vegetables may be weighed before or after cooking, taking care to drain thoroughly if weighed after boiling.

Those vegetables which are allowed in the diet may be prepared as desired but it must be remembered that all butter, cream, milk, etc., used in preparing vegetables for the table must be taken from the total daily allowance of such foods. The only ingredients that may be added to the vegetables without increasing the food value, are vinegar, salt, pepper or mineral oil.

BRAISED CELERY

Clean celery and cut into pieces. Cook in boiling water five minutes. Drain and brown in pan with a little butter. Add a little meat stock and simmer until tender. Season and serve.

HOT SLAW

Select a firm green head of cabbage. Clean and slice finely. Put on in boiling water and cook with cover partly off for fifteen to twenty minutes or until done. Drain and dress with vinegar, butter, salt and pepper.

SCALLOPED CABBAGE

Prepare cabbage as above. When tender, drain and put in baking dish. Add one or two tablespoons of grated cheese, and cream to moisten. Season with salt and pepper and brown in oven.

SCALLOPED EGG PLANT

Pare egg plant and cut into small cubes, cook in boiling salted water until tender. Drain. Put one or two tablespoons of butter in frying pan, add one-half tablespoon minced onion, one-half tablespoon chopped parsley and the cooked egg plant. Season with salt and pepper, turn into baking dish, sprinkle with crumbled bran biscuit and brown in oven. A little grated cheese may be added before placing dish in oven if desired.

BOILED SUMMER SQUASH

Vegetable Marrow or Turban squash may be prepared in this way: wash and cut into thick slices or quarters. Cook twenty minutes in boiling salted water or until soft. Drain well, mash and season with butter, salt and pepper.

JERUSALEM ARTICHOKES

The Jerusalem artichoke is a tuber and is found growing wild in many parts of the United States

and Canada. Lusk in "Science of Nutrition," page 54, states that Jerusalem artichokes have little or no direct nutritive function. Sherman in "Chemistry of Food and Nutrition," page 17, says: "Inulin, occurring in the tubers of the Jerusalem artichoke, is of practically no importance as human food." It is of interest, then, for the diabetic to know of a vegetable which may be used practically without restriction and which can be used as a substitute for the usually forbidden potato.

Preparation: Wash the artichokes and put into boiling salted water. Cook gently about twenty minutes or until tender. Drain and peel. Do not over-cook, as they are apt to become discolored.

MASHED JERUSALEM ARTICHOKES

Prepare as above; when tender drain, then mash, or put through sieve. Reheat and serve with butter, salt and pepper.

CREAMED ARTICHOKES

Serve sliced boiled artichokes with cream, salt and pepper.

CHILE SAUCE

6 tomatoes
2 peppers
1 onion
1 cup vinegar
½ tablespoon salt
½ tablespoon whole cloves
½ tablespoon broken stick cinnamon
Saccharine to sweeten

Chop tomatoes, peppers and onion. Put in a preserving kettle with remaining ingredients. The spices should be tied in a small piece of cheesecloth before putting in kettle. Cook slowly, stirring frequently, for two hours or until thick.

CHOPPED PICKLES

1 small head red or green cabbage
4 green peppers
1 onion
1 tablespoon salt
1 cup vinegar
½ cup water
Saccharine to taste

Chop finely cabbage, peppers and onion, add salt, vinegar, water and saccharine. Boil gently until tender, put in jars and seal.

DESSERTS

CUSTARD

(The food value of one-third of this recipe is: prot. 3 gms., fat 10 gms., and carbo. 2 gms.)

1 egg
¼ grain saccharine
Salt
½ cup water
½ cup (8 tablespoons) 20% cream
¼ teaspoon vanilla, almond or other flavoring

Beat egg slightly, add saccharine and a very little salt. Heat cream and water to the scalding point and add slowly to egg. Strain into three small custard cups, dividing the mixture equally. Each portion may be flavored differently; for example, either almond or a little grated nutmeg, orange or lemon rind.

GELATINE DESSERTS

(Any of the following six desserts will have a food value of prot. 3 gms., and carbo. 5 gms.)

LEMON JELLY

1 teaspoon gelatine
1 tablespoon cold water
5 tablespoons boiling water
3 tablespoons lemon juice
Saccharine to sweeten

ORANGE JELLY

1 teaspoon gelatine
1 tablespoon cold water
5 tablespoons boiling water
2 tablespoons orange juice
2 teaspoons lemon juice
Saccharine to sweeten

GRAPEFRUIT JELLY

1 teaspoon gelatine
1 tablespoon cold water
5 tablespoons boiling water
3½ tablespoons grapefruit juice
Saccharine to sweeten

STRAWBERRY JELLY

1 teaspoon gelatine
1 tablespoon cold water
5 tablespoons boiling water
Juice and pulp from 1/3 cup strawberries
Saccharine to sweeten

PEACH JELLY

1 teaspoon gelatine
1 tablespoon cold water
6 tablespoons boiling water
Juice and pulp from ½ small peach (2 oz., or 60 gms.)
Saccharine to sweeten

CRANBERRY JELLY

1 teaspoon gelatine
1 tablespoon cold water
4 tablespoons boiling water
Juice and pulp from 1/3 cup cooked cranberries
Saccharine to sweeten

Method of preparation for above six recipes.— Soak gelatine in the cold water five minutes, dissolve in the boiling water. If gelatine does not readily dissolve place vessel containing gelatine mixture over boiling water a few minutes. Then add fruit juice or pulp and just enough saccharine to sweeten. Set aside in a cool place until firm. Care must be taken not to add too much saccharine since an excess gives a disagreeable bitter taste. A little practice will determine the right amount needed to suit the individual taste.

SNOW PUDDING

One-half of a stiffly beaten egg white (protein 2 grams) may be beaten into any of the above gelatine desserts when just beginning to thicken. Chill and serve with or without cream.

BAVARIAN CREAM

Whip two tablespoons of cream and fold into any of the above gelatine desserts when just beginning to thicken.

FRUIT ICES

Any of the above gelatine dessert recipes may be frozen and served as fruit ices. When making ices omit gelatine and use only fruit juice or pulp, water and saccharine to sweeten.

COCOA JELLY

1 teaspoon gelatine
1 tablespoon cold water
2 or 3 grains salt
½ teaspoon vanilla
2 teaspoons cocoa
½ cup boiling water
Saccharine

Soak gelatine in cold water five minutes. Add cocoa to boiling water and boil five minutes. Dissolve gelatine in hot cocoa, add saccharine, salt and vanilla. Set aside in a cool place until firm. One-half of a stiffly beaten egg white, or two tablespoons of cream, whipped, may be added to

jelly as suggested under Snow Pudding and Bavarian Cream.

ICE-CREAM

½ cup water	Saccharine
½ cup 40% cream	Flavoring

Add water to cream, sweeten with one-eighth grain saccharine and flavor with vanilla or other desired flavoring. Freeze and serve.

DESSERTS (NO FOOD VALUE)

1 teaspoon agar	Saccharine
1 cup water	Flavoring
2-3 grains of salt	

Boil agar and water until dissolved, add saccharine and salt, and flavor with any desired sugar-free fruit extracts, coffee, or an infusion of boiled cocoa shells. If cocoa or coffee is used add a few drops of vanilla.

Two teaspoons of gelatine may be substituted for agar. The amount of gelatine used is so small as to be practically negligible as food.

FOOD TABLE

The following table has been arranged for convenience in calculating the food value of certain dishes:

	Carbohydrate *grams*	Protein *grams*	Fat *grams*
Gelatine, 1 tablespoon, or 10 gms.	..	9	..
Gelatine, 1 teaspoon, or 3 gms.	..	3	..
Flour, 1 tablespoon, or 10 gms.	7	1	..
Flour, 1 teaspoon, or 3 gms.	2	..	..
Chocolate (bitter), 1 square, 1 oz., or 30 gms.	9	4	14
Cocoa, 1 tablespoon, ½ oz., or 15 gms.	3	2	2
Lemon juice, 1 tablespoon	1.5	..	..
Orange juice, 1 tablespoon	2	..	..
Horseradish, 2 teaspoons	1	..	..
Bacon, raw, 1 oz., or 30 gms.	..	20	4
Saltine or cracker, weight 3 gms.	2	..	1

Bran used in recipes may be secured most economically at any feed store or flour mill. All bran used must be thoroughly washed to free of starch. Some of the various brans put up in packages contain as much as 60 per cent carbohydrate, and if used great care should be taken to wash thoroughly.

Cellu-flour may be obtained from the Dietetic Cellulose Co., 2557 West Chicago Avenue, Chicago, Illinois. India gum may be obtained at drug stores or from the above firm.

Mineral oil, agar and saccharine may be obtained at drug stores. Saccharine may be pur-

chased in a liquid form under various trade names and will be found most convenient.

A variety of concentrated fruit flavorings and extracts are for sale in many grocery stores under the trade name of "Virginia Dare" extracts. The lemon, orange, almond, anise and celery flavors contain no starches or sugars whatever. The small amount present in the vanilla and a few of the other flavors is so small as to be negligible when one considers that one teaspoon of the extract will flavor a quart of liquid. Among some of the flavors obtainable are sherry, apricot, cherry, peach, pineapple, raspberry, strawberry, maple, banana and grape. For further information address Garrett & Co., 10 Bush Terminal, Brooklyn, N. Y.

Raspberry, lemon, orange and maple flavorings for diabetics may also be obtained from Emma Hall, 17 Oak Square Ave., Brighton, Mass.

A convenient diabetic "Jello" in either orange. lemon, or raspberry flavor, is now made by the Genesee Pure Food Co., Leroy, N. Y. The amount of protein in this product is so small that the jelly may be considered as practically a "filler."

A food-free cocoa infusion may be made from cocoa shells. These are put up by Walter Baker & Co., Ltd., 159 Franklin Street, New York City.

Section X

DIRECTIONS FOR URINE EXAMINATION

The equipment necessary for collecting and testing the urine consists of the following: one thoroughly clean, wide-mouthed glass jar with cover, and sufficiently large to contain the entire twenty-four hour quantity of urine; three test-tubes, with a small brush for cleaning; one teaspoon; one bottle of toluol; one bottle of Benedict's Solution; and one small alcohol lamp. A gas burner may be used in place of alcohol lamp.

The method of collecting the urine is as follows: the first urine voided in the morning at 7 a. m. should be discarded, after which the entire quantity voided during the following twenty-four hours up to and including that at 7 a. m. the next morning should be collected in the wide-mouthed glass jar and kept in a cool place. One teaspoon of toluol may be added to the urine as a preservative. The quantity of urine voided for each period of twenty-four hours should be measured and recorded. A small amount (4 oz.) should be

reserved for making the tests. It is advisable to make these tests in the morning, every day or every other day as directed by the attending physician. The results of each test should be recorded for his information.

The method of making the test for sugar is as follows: pour five cubic centimeters, or one full teaspoon, of Benedict's Solution into a test tube, and add eight to ten drops (no more) of the urine to be tested. Heat this over the alcohol lamp or gas flame, and allow it to boil vigorously for three minutes, shaking the tube to prevent boiling over. Then set it aside to cool. If sugar is present, a large amount of precipitate or sediment will form, giving a cloudy appearance. When the urine is free of sugar, the solution will be clear and of a blue color. Urine with a trace of sugar will give an olive green or yellowish tan reaction with some sediment. Urine with approximately 2 per cent of sugar will give a red reaction with considerable sediment. When the percentage of sugar is low (under 0.3 per cent), the sediment will form only on cooling of the solution.

The test tube with contents may be heated by placing it upright in a vessel containing a small amount of boiling water. In this case, the heating must be continued for five minutes, during which

time the water in the pan must boil vigorously. By this method, there is less danger of the solution's boiling over the test tube and burning the fingers, and less danger of breaking the tube. A medicine dropper is of value in measuring the urine.

Section XI

SUGGESTIONS FOR THE PREVENTION OF DIABETES

The tendency to diabetes seems to run in certain families and races. It may be largely prevented or controlled by observing the following rules:

1. Keep the body at a normal weight.
2. Avoid excesses in eating.
3. Go to a physician twice a year for a urine examination.

Dr. Elliot P. Joslin, of Boston, is authority for the statement that it is rare for diabetes to develop in an individual over the age of twenty who is habitually underweight. "Diabetes," he says, "is a penalty of obesity, and the greater the obesity, the more likely is Nature to enforce it." The Lincoln National Life Insurance Company finds that the incidence of diabetes increases with age only among obese individuals. Among the thin, it remains constant.

STANDARD TABLE OF AVERAGE HEIGHTS AND WEIGHTS OF MEN AND WOMEN OF VARIOUS AGES.*

MEN

Heights		Weights								
Ft.	In.	15–19 yrs.	20–24 yrs.	25–29 yrs.	30–34 yrs.	35–39 yrs.	40–44 yrs.	45–49 yrs.	50–54 yrs.	55–59 yrs.
4	11	111	117	122	125	127	130	132	133	134
5	0	113	119	124	127	129	132	134	135	136
5	1	115	121	126	129	131	134	136	137	138
5	2	118	124	128	131	133	136	138	139	140
5	3	121	127	131	134	136	139	141	142	143
5	4	124	131	134	137	140	142	144	145	146
5	5	128	135	138	141	144	146	148	149	150
5	6	132	139	142	145	148	150	152	153	154
5	7	136	142	146	149	152	154	156	157	158
5	8	140	146	150	154	157	159	161	162	163
5	9	144	150	154	158	162	164	166	167	168
5	10	148	154	158	163	167	169	171	172	173
5	11	153	158	163	168	172	175	177	178	179
6	0	158	163	169	174	178	181	183	184	185
6	1	163	168	175	180	184	187	190	191	192
6	2	168	173	181	186	191	194	197	198	199
6	3	173	178	187	192	197	201	204	205	206

* These Tables (revised to April, 1918) are used through the courtesy of the Metropolitan Life Insurance Company. According to their Bureau of Statistics, the *average* weight is not the best weight after 35 years of age. Those who weigh from 10 to 20 per cent below the average show the optimum condition of longevity at the most of the ages after early adult life.

WOMEN

Heights		Weights								
Ft.	In.	15–19 yrs.	20–24 yrs.	25–29 yrs.	30–34 yrs.	35–39 yrs.	40–44 yrs.	45–49 yrs.	50–54 yrs.	55–59 yrs.
4	11	110	113	116	119	122	126	129	131	132
5	0	112	115	118	121	124	128	131	133	134
5	1	114	117	120	123	126	130	133	135	137
5	2	117	120	122	125	129	133	136	138	140
5	3	120	123	125	128	132	136	139	141	143
5	4	123	126	129	132	136	139	142	144	146
5	5	126	129	132	136	140	143	146	148	150
5	6	130	133	136	140	144	147	151	152	153
5	7	134	137	140	144	148	151	155	157	158
5	8	138	141	144	148	152	155	159	162	163
5	9	141	145	148	152	156	159	163	166	167
5	10	145	149	152	155	159	162	166	170	173
5	11	150	153	155	158	162	166	170	174	177
6	0	155	157	159	162	165	169	173	177	182

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